TECHNICAL REPORT No. 39-4

Oregon State Highway Department

FORREST COOPER, State Highway Engineer

Offset Tables

for

Vertical Curves

Oregon State Highway Commission

SALEM

GLENN L. JACKSON, Chairman,
KENNETH N. FRIDLEY, Commissioner,
DAVID B. SIMPSON, Commissioner

Reprinted October, 1954

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Introduction

The calculation of the offsets from the tangent grade for parabolic vertical curves can be quickly and simply made by using the tables given in this report. These tables are based on the generally used formula:

$$y = x^2 \left[\frac{g_1 - g_2}{2L}\right]$$

where y = the tangent offset in feet
x = distance, in stations, from the beginning of the curve
L = length of curve in stations
g_1 = grade of back tangent in per cent
g_2 = grade of forward tangent in per cent

To simplify the computations, factors have been computed for a vertical curve, 1,000 feet in length, with an algebraic grade difference, $(g_1 - g_2)$, of 1.0. These factors are given for distances, "x", of 1 foot to 3,200 feet in Table No. 2. To use Table No. 2 for vertical curves of other lengths than 1,000 feet, a second factor is necessary. These factors are given in Table No. 1, for curves up to 6,400 feet in length, by multiples of 50 feet. To obtain the Table No. 1 factor for a vertical curve of a length not given in the table, divide 1,000 by the length of curve. Thus for a vertical curve 1,162 feet in length the Table No. 1 factor is 0.8605852.

The tangent offsets can be calculated from the back tangent, and its extensions beyond the vertex, for the entire length of curve if desired. Generally, however, it will be found most convenient to calculate offsets for the first half of the curve from the back tangent and for the second half of the curve

from the forward tangent. In this case it must be kept in mind that the distance, "x", for the first half of the curve is the distance forward from the beginning of the curve, while for the second half of the curve, "x" is the distance back from the end of the curve.

The factors given in Tables No. 1 and No. 2 are applicable to either method. By computing the offsets for the first half of the curve from the back tangent and for the second half from the forward tangent, offsets for a curve 6,400 feet in length can be obtained from the factors given in Table No. 2 for distances of "x" from 1 to 3,200 feet.

For convenience, the tables are prepared showing the length of curve and distance from beginning of curve in feet rather than in stations.

The use of the tables can best be illustrated by numerical examples:

Given a back tangent with a grade of +2.5 per cent and a forward tangent with a grade of -1.6 per cent, required the tangent offsets at even stations for a 1,200-foot vertical curve beginning at station 10+24.

The algebraic grade difference, $(g_1 - g_2)$, is 4.1. The Table No. 1 factor for a 1,200-foot vertical curve is 0.8333333.

$$4.1 \times 0.8333333 = 3.4166665$$

which is a factor used for this entire curve in converting the factors of Table No. 2 to vertical distances.

Station 11+00 is 76 feet ahead from the beginning of the curve. From Table No. 2 the factor for 76 feet is 0.02888.

$$3.4166665 \times 0.02888 = 0.099 \text{ feet}$$

The vertical curve elevation is 0.099 feet

below the tangent grade at the station.

Station 12+00 is 176 feet ahead of the beginning of the curve. From Table No. 2 the factor is 0.15488 and the offset is 3.4166665 x 0.15488 = 0.529 feet below tangent grade. Other points up to the mid point of the curve are computed in a similar manner.

The end of the curve is at station 22+24. Station 22+00 is 24 feet back on the forward tangent. From Table No. 2 the factor is 0.00288 and the offset is 3.4166665 x 0.00288 = 0.010. At station 21+00, 124 feet back, the factor is 0.07688 and the offset is 3.4166665 x 0.07688 = 0.263. Both of these offsets are, of course, below the forward tangent grade.

The factors given in the tables are carried out farther than is necessary for general use. Factors to the fifth decimal place in Table No. 1 and to the fourth decimal place in Table No. 2 will give results correct to 0.001 foot.

Table No. 1

Length of Vertical Curves in Feet	Factor	Length of Vertical Curves in Feet	Factor
50	20.0000000	1550	0.6451613
100	10.0000000	1600	0.6250000
150	6.6666666	1650	0.6060606
200	5.0000000	1700	0.5882353
250	4.0000000	1750	0.5714286
300	3.3333333	1800	0.5555555
350	2.8571429	1850	0.5405405
400	2.5000000	1900	0.5263158
450	2.2222222	1950	0.5128205
500	2.0000000	2000	0.5000000
550	1.8181818	2050	0.4878049
600	1.6666666	2100	0.4761905
650	1.5384615	2150	0.4651163
700	1.4285714	2200	0.4545454
750	1.3333333	2250	0.4444444
800	1.2500000	2300	0.4347826
850	1.1764706	2350	0.4255319
900	1.1111111	2400	0.4166666
950	1.0526316	2450	0.4081633
1000	1.0000000	2500	0.4000000
1050	0.9523810	2550	0.3921569
1100	0.9090909	2600	0.3846154
1150	0.8695652	2650	0.3773585
1200	0.8333333	2700	0.3703704
1250	0.8000000	2750	0.3636364
1300	0.7692308	2800	0.3571429
1350	0.7407407	2850	0.3508772
1400	0.7142857	2900	0.3448276
1450	0.6896552	2950	0.3389831
1500	0.6666666	3000	0.3333333

Table No. 1

Length of Vertical Curves in Feet	Factor	Length of Vertical Curves in Feet	Factor
3050	0.3278689	4800	0.2083333
3100	0.3225806	4850	0.2061856
3150	0.3174603	4900	0.2040816
3200	0.3125000	4950	0.2020202
3250	0.3076923	5000	0.2000000
3300	0.3030303		
3350	0.2985075	5050	0.1980198
3400	0.2941176	5100	0.1960784
3450	0.2898551	5150	0.1941748
3500	0.2857143	5200	0.1923077
		5250	0.1904762
3550	0.2816901	5280	0.1893939
3600	0.2777777	5300	0.1886792
3650	0.2739726	5350	0.1869159
3700	0.2702703	5400	0.1851852
3750	0.2666666	5450	0.1834862
3800	0.2631579	5500	0.1818182
3850	0.2597403		
3900	0.2564103	5550	0.1801802
3950	0.2531646	5600	0.1785714
4000	0.2500000	5650	0.1769912
		5700	0.1754386
4050	0.2469136	5750	0.1739130
4100	0.2439024	5800	0.1724138
4150	0.2409639	5850	0.1709402
4200	0.2380952	5900	0.1694915
4250	0.2352941	5950	0.1680672
4300	0.2325581	6000	0.1666667
4350	0.2298851		
4400	0.2272727	6050	0.1652893
4450	0.2247191	6100	0.1639344
4500	0.2222222	6150	0.1626016
		6200	0.1612903
4550	0.2197802	6250	0.1600000
4600	0.2173913	6300	0.1587302
4650	0.2150538	6350	0.1574803
4700	0.2127660	6400	0.1562500
4750	0.2105263		

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
1	0.000005	51	0.013005
2	0.000020	52	0.013520
3	0.000045	53	0.014045
4	0.000080	54	0.014580
5	0.000125	55	0.015125
6	0.000180	56	0.015680
7	0.000245	57	0.016245
8	0.000320	58	0.016820
9	0.000405	59	0.017405
10	0.000500	60	0.018000
11	0.000605	61	0.018605
12	0.000720	62	0.019220
13	0.000845	63	0.019845
14	0.000980	64	0.020480
15	0.001125	65	0.021125
16	0.001280	66	0.021780
17	0.001445	67	0.022445
18	0.001620	68	0.023120
19	0.001805	69	0.023805
20	0.002000	70	0.024500
21	0.002205	71	0.025205
22	0.002420	72	0.025920
23	0.002645	73	0.026645
24	0.002880	74	0.027380
25	0.003125	75	0.028125
26	0.003380	76	0.028880
27	0.003645	77	0.029645
28	0.003920	78	0.030420
29	0.004205	79	0.031205
30	0.004500	80	0.032000
31	0.004805	81	0.032805
32	0.005120	82	0.033620
33	0.005445	83	0.034445
34	0.005780	84	0.035280
35	0.006125	85	0.036125
36	0.006480	86	0.036980
37	0.006845	87	0.037845
38	0.007220	88	0.038720
39	0.007605	89	0.039605
40	0.008000	90	0.040500
41	0.008405	91	0.041405
42	0.008820	92	0.042320
43	0.009245	93	0.043245
44	0.009680	94	0.044180
45	0.010125	95	0.045125
46	0.010580	96	0.046080
47	0.011045	97	0.047045
48	0.011520	98	0.048020
49	0.012005	99	0.049005
50	0.012500	100	0.050000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
101	0.051005	151	0.114005
102	0.052020	152	0.115520
103	0.053045	153	0.117045
104	0.054080	154	0.118580
105	0.055125	155	0.120125
106	0.056180	156	0.121680
107	0.057245	157	0.123245
108	0.058320	158	0.124820
109	0.059405	159	0.126405
110	0.060500	160	0.128000
111	0.061605	161	0.129605
112	0.062720	162	0.131220
113	0.063845	163	0.132845
114	0.064980	164	0.134480
115	0.066125	165	0.136125
116	0.067280	166	0.137780
117	0.068445	167	0.139445
118	0.069620	168	0.141120
119	0.070805	169	0.142805
120	0.072000	170	0.144500
121	0.073205	171	0.146205
122	0.074420	172	0.147920
123	0.075645	173	0.149645
124	0.076880	174	0.151380
125	0.078125	175	0.153125
126	0.079380	176	0.154880
127	0.080645	177	0.156645
128	0.081920	178	0.158420
129	0.083205	179	0.160205
130	0.084500	180	0.162000
131	0.085805	181	0.163805
132	0.087120	182	0.165620
133	0.088445	183	0.167445
134	0.089780	184	0.169280
135	0.091125	185	0.171125
136	0.092480	186	0.172980
137	0.093845	187	0.174845
138	0.095220	188	0.176720
139	0.096605	189	0.178605
140	0.098000	190	0.180500
141	0.099405	191	0.182405
142	0.100820	192	0.184320
143	0.102245	193	0.186245
144	0.103680	194	0.188180
145	0.105125	195	0.190125
146	0.106580	196	0.192080
147	0.108045	197	0.194045
148	0.109520	198	0.196020
149	0.111005	199	0.198005
150	0.112500	200	0.200000

Table.No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
201	0.202005	251	0.315005
202	0.204020	252	0.317520
203	0.206045	253	0.320045
204	0.208080	254	0.322580
205	0.210125	255	0.325125
206	0.212180	256	0.327680
207	0.214245	257	0.330245
208	0.216320	258	0.332820
209	0.218405	259	0.335405
210	0.220500	260	0.338000
211	0.222605	261	0.340605
212	0.224720	262	0.343220
213	0.226845	263	0.345845
214	0.228980	264	0.348480
215	0.231125	265	0.351125
216	0.233280	266	0.353780
217	0.235445	267	0.356445
218	0.237620	268	0.359120
219	0.239805	269	0.361805
220	0.242000	270	0.364500
221	0.244205	271	0.367205
222	0.246420	272	0.369920
223	0.248645	273	0.372645
224	0.250880	274	0.375380
225	0.253125	275	0.378125
226	0.255380	276	0.380880
227	0.257645	277	0.383645
228	0.259920	278	0.386420
229	0.262205	279	0.389205
230	0.264500	280	0.392000
231	0.266805	281	0.394805
232	0.269120	282	0.397620
233	0.271445	283	0.400445
234	0.273780	284	0.403280
235	0.276125	285	0.406125
236	0.278480	286	0.408980
237	0.280845	287	0.411845
238	0.283220	288	0.414720
239	0.285605	289	0.417605
240	0.288000	290	0.420500
241	0.290405	291	0.423405
242	0.292820	292	0.426320
243	0.295245	293	0.429245
244	0.297680	294	0.432180
245	0.300125	295	0.435125
246	0.302580	296	0.438080
247	0.305045	297	0.441045
248	0.307520	298	0.444020
249	0.310005	299	0.447005
250	0.312500	300	0.450000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
301	0.453005	351	0.616005
302	0.456020	352	0.619520
303	0.459045	353	0.623045
304	0.462080	354	0.626580
305	0.465125	355	0.630125
306	0.468180	356	0.633680
307	0.471245	357	0.637245
308	0.474320	358	0.640820
309	0.477405	359	0.644405
310	0.480500	360	0.648000
311	0.483605	361	0.651605
312	0.486720	362	0.655220
313	0.489845	363	0.658845
314	0.492980	364	0.662480
315	0.496125	365	0.666125
316	0.499280	366	0.669780
317	0.502445	367	0.673445
318	0.505620	368	0.677120
319	0.508805	369	0.680805
320	0.512000	370	0.684500
321	0.515205	371	0.688205
322	0.518420	372	0.691920
323	0.521645	373	0.695645
324	0.524880	374	0.699380
325	0.528125	375	0.703125
326	0.531380	376	0.706880
327	0.534645	377	0.710645
328	0.537920	378	0.714420
329	0.541205	379	0.718205
330	0.544500	380	0.722000
331	0.547805	381	0.725805
332	0.551120	382	0.729620
333	0.554445	383	0.733445
334	0.557780	384	0.737280
335	0.561125	385	0.741125
336	0.564480	386	0.744980
337	0.567845	387	0.748845
338	0.571220	388	0.752720
339	0.574605	389	0.756605
340	0.578000	390	0.760500
341	0.581405	391	0.764405
342	0.584820	392	0.768320
343	0.588245	393	0.772245
344	0.591680	394	0.776180
345	0.595125	395	0.780125
346	0.598580	396	0.784080
347	0.602045	397	0.788045
348	0.605520	398	0.792020
349	0.609005	399	0.796005
350	0.612500	400	0.800000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
401	0.804005	451	1.017005
402	0.808020	452	1.021520
403	0.812045	453	1.026045
404	0.816080	454	1.030580
405	0.820125	455	1.035125
406	0.824180	456	1.039680
407	0.828245	457	1.044245
408	0.832320	458	1.048820
409	0.836405	459	1.053405
410	0.840500	460	1.058000
411	0.844605	461	1.062605
412	0.848720	462	1.067220
413	0.852845	463	1.071845
414	0.856980	464	1.076480
415	0.861125	465	1.081125
416	0.865280	466	1.085780
417	0.869445	467	1.090445
418	0.873620	468	1.095120
419	0.877805	469	1.099805
420	0.882000	470	1.104500
421	0.886205	471	1.109205
422	0.890420	472	1.113920
423	0.894645	473	1.118645
424	0.898880	474	1.123380
425	0.903125	475	1.128125
426	0.907380	476	1.132880
427	0.911645	477	1.137645
428	0.915920	478	1.142420
429	0.920205	479	1.147205
430	0.924500	480	1.152000
431	0.928805	481	1.156805
432	0.933120	482	1.161620
433	0.937445	483	1.166445
434	0.941780	484	1.171280
435	0.946125	485	1.176125
436	0.950480	486	1.180980
437	0.954845	487	1.185845
438	0.959220	488	1.190720
439	0.963605	489	1.195605
440	0.968000	490	1.200500
441	0.972405	491	1.205405
442	0.976820	492	1.210320
443	0.981245	493	1.215245
444	0.985680	494	1.220180
445	0.990125	495	1.225125
446	0.994580	496	1.230080
447	0.999045	497	1.235045
448	1.003520	498	1.240020
449	1.008005	499	1.245005
450	1.012500	500	1.250000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
501	1.255005	551	1.518005
502	1.260020	552	1.523520
503	1.265045	553	1.529045
504	1.270080	554	1.534580
505	1.275125	555	1.540125
506	1.280180	556	1.545680
507	1.285245	557	1.551245
508	1.290320	558	1.556820
509	1.295405	559	1.562405
510	1.300500	560	1.568000
511	1.305605	561	1.573605
512	1.310720	562	1.579220
513	1.315845	563	1.584845
514	1.320980	564	1.590480
515	1.326125	565	1.596125
516	1.331280	566	1.601780
517	1.336445	567	1.607445
518	1.341620	568	1.613120
519	1.346805	569	1.618805
520	1.352000	570	1.624500
521	1.357205	571	1.630205
522	1.362420	572	1.635920
523	1.367645	573	1.641645
524	1.372880	574	1.647380
525	1.378125	575	1.653125
526	1.383380	576	1.658880
527	1.388645	577	1.664645
528	1.393920	578	1.670420
529	1.399205	579	1.676205
530	1.404500	580	1.682000
531	1.409805	581	1.687805
532	1.415120	582	1.693620
533	1.420445	583	1.699445
534	1.425780	584	1.705280
535	1.431125	585	1.711125
536	1.436480	586	1.716980
537	1.441845	587	1.722845
538	1.447220	588	1.728720
539	1.452605	589	1.734605
540	1.458000	590	1.740500
541	1.463405	591	1.746405
542	1.468820	592	1.752320
543	1.474245	593	1.758245
544	1.479680	594	1.764180
545	1.485125	595	1.770125
546	1.490580	596	1.776080
547	1.496045	597	1.782045
548	1.501520	598	1.788020
549	1.507005	599	1.794005
550	1.512500	600	1.800000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
601	1.806005	651	2.119005
602	1.812020	652	2.125520
603	1.818045	653	2.132045
604	1.824080	654	2.138580
605	1.830125	655	2.145125
606	1.836180	656	2.151680
607	1.842245	657	2.158245
608	1.848320	658	2.164820
609	1.854405	659	2.171405
610	1.860500	660	2.178000
611	1.866605	661	2.184605
612	1.872720	662	2.191220
613	1.878845	663	2.197845
614	1.884980	664	2.204480
615	1.891125	665	2.211125
616	1.897280	666	2.217780
617	1.903445	667	2.224445
618	1.909620	668	2.231120
619	1.915805	669	2.237805
620	1.920000	670	2.244500
621	1.928205	671	2.251205
622	1.934420	672	2.257920
623	1.940645	673	2.264645
624	1.946880	674	2.271380
625	1.953125	675	2.278125
626	1.959380	676	2.284880
627	1.965645	677	2.291645
628	1.971920	678	2.298420
629	1.978205	679	2.305205
630	1.984500	680	2.312000
631	1.990805	681	2.318805
632	1.997120	682	2.325620
633	2.003445	683	2.332445
634	2.009780	684	2.339280
635	2.016125	685	2.346125
636	2.022480	686	2.352980
637	2.028845	687	2.359845
638	2.035220	688	2.366720
639	2.041605	689	2.373605
640	2.048000	690	2.380500
641	2.054405	691	2.387405
642	2.060820	692	2.394320
643	2.067245	693	2.401245
644	2.073680	694	2.408180
645	2.080125	695	2.415125
646	2.086580	696	2.422080
647	2.093045	697	2.429045
648	2.099520	698	2.436020
649	2.106005	699	2.443005
650	2.112500	700	2.450000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
701	2.457005	751	2.820005
702	2.464020	752	2.827520
703	2.471045	753	2.835045
704	2.478080	754	2.842580
705	2.485125	755	2.850125
706	2.492180	756	2.857680
707	2.499245	757	2.865245
708	2.506320	758	2.872820
709	2.513405	759	2.880405
710	2.520500	760	2.888000
711	2.527605	761	2.895605
712	2.534720	762	2.903220
713	2.541845	763	2.910845
714	2.548980	764	2.918480
715	2.556125	765	2.926125
716	2.563280	766	2.933780
717	2.570445	767	2.941445
718	2.577620	768	2.949120
719	2.584805	769	2.956805
720	2.592000	770	2.964500
721	2.599205	771	2.972205
722	2.606420	772	2.979920
723	2.613645	773	2.987645
724	2.620880	774	2.995380
725	2.628125	775	3.003125
726	2.635380	776	3.010880
727	2.642645	777	3.018645
728	2.649920	778	3.026420
729	2.657205	779	3.034205
730	2.664500	780	3.042000
731	2.671805	781	3.049805
732	2.679120	782	3.057620
733	2.686445	783	3.065445
734	2.693780	784	3.073280
735	2.701125	785	3.081125
736	2.708480	786	3.088980
737	2.715845	787	3.096845
738	2.723220	788	3.104720
739	2.730605	789	3.112605
740	2.738000	790	3.120500
741	2.745405	791	3.128405
742	2.752820	792	3.136320
743	2.760245	793	3.144245
744	2.767680	794	3.152180
745	2.775125	795	3.160125
746	2.782580	796	3.168080
747	2.790045	797	3.176045
748	2.797520	798	3.184020
749	2.805005	799	3.192005
750	2.812500	800	3.200000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
801	3.208005	851	3.621005
802	3.216020	852	3.629520
803	3.224045	853	3.638045
804	3.232080	854	3.646580
805	3.240125	855	3.655125
806	3.248180	856	3.663680
807	3.256245	857	3.672245
808	3.264320	858	3.680820
809	3.272405	859	3.689405
810	3.280500	860	3.698000
811	3.288605	861	3.706605
812	3.296720	862	3.715220
813	3.304845	863	3.723845
814	3.312980	864	3.732480
815	3.321125	865	3.741125
816	3.329280	866	3.749780
817	3.337445	867	3.758445
818	3.345620	868	3.767120
819	3.353805	869	3.775805
820	3.362000	870	3.784500
821	3.370205	871	3.793205
822	3.378420	872	3.801920
823	3.386645	873	3.810645
824	3.394880	874	3.819380
825	3.403125	875	3.828125
826	3.411380	876	3.836880
827	3.419645	877	3.845645
828	3.427920	878	3.854420
829	3.436205	879	3.863205
830	3.444500	880	3.872000
831	3.452805	881	3.880805
832	3.461120	882	3.889620
833	3.469445	883	3.898445
834	3.477780	884	3.907280
835	3.486125	885	3.916125
836	3.494480	886	3.924980
837	3.502845	887	3.933845
838	3.511220	888	3.942720
839	3.519605	889	3.951605
840	3.528000	890	3.960500
841	3.536405	891	3.969405
842	3.544820	892	3.978320
843	3.553245	893	3.987245
844	3.561680	894	3.996180
845	3.570125	895	4.005125
846	3.578580	896	4.014080
847	3.587045	897	4.023045
848	3.595520	898	4.032020
849	3.604005	899	4.041005
850	3.612500	900	4.050000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
901	4.059005	951	4.522005
902	4.068020	952	4.531520
903	4.077045	953	4.541045
904	4.086080	954	4.550580
905	4.095125	955	4.560125
906	4.104180	956	4.569680
907	4.113245	957	4.579245
908	4.122320	958	4.588820
909	4.131405	959	4.598405
910	4.140500	960	4.608000
911	4.149605	961	4.617605
912	4.158720	962	4.627220
913	4.167845	963	4.636845
914	4.176980	964	4.646480
915	4.186125	965	4.656125
916	4.195280	966	4.665780
917	4.204445	967	4.675445
918	4.213620	968	4.685120
919	4.222805	969	4.694805
920	4.232000	970	4.704500
921	4.241205	971	4.714205
922	4.250420	972	4.723920
923	4.259645	973	4.733645
924	4.268880	974	4.743380
925	4.278125	975	4.753125
926	4.287380	976	4.762880
927	4.296645	977	4.772645
928	4.305920	978	4.782420
929	4.315205	979	4.792205
930	4.324500	980	4.802000
931	4.333805	981	4.811805
932	4.343120	982	4.821620
933	4.352445	983	4.831445
934	4.361780	984	4.841280
935	4.371125	985	4.851125
936	4.380480	986	4.860980
937	4.389845	987	4.870845
938	4.399220	988	4.880720
939	4.408605	989	4.890605
940	4.418000	990	4.900500
941	4.427405	991	4.910405
942	4.436820	992	4.920320
943	4.446245	993	4.930245
944	4.455680	994	4.940180
945	4.465125	995	4.950125
946	4.474580	996	4.960080
947	4.484045	997	4.970045
948	4.493520	998	4.980020
949	4.503005	999	4.990005
950	4.512500	1000	5.000000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
1001	5.010005	1051	5.523005
1002	5.020020	1052	5.533520
1003	5.030045	1053	5.544045
1004	5.040080	1054	5.554580
1005	5.050125	1055	5.565125
1006	5.060180	1056	5.575680
1007	5.070245	1057	5.586245
1008	5.080320	1058	5.596820
1009	5.090405	1059	5.607405
1010	5.100500	1060	5.618000
1011	5.110605	1061	5.628605
1012	5.120720	1062	5.639220
1013	5.130845	1063	5.649845
1014	5.140980	1064	5.660480
1015	5.151125	1065	5.671125
1016	5.161280	1066	5.681780
1017	5.171445	1067	5.692445
1018	5.181620	1068	5.703120
1019	5.191805	1069	5.713805
1020	5.202000	1070	5.724500
1021	5.212205	1071	5.735205
1022	5.222420	1072	5.745920
1023	5.232645	1073	5.756645
1024	5.242880	1074	5.767380
1025	5.253125	1075	5.778125
1026	5.263380	1076	5.788880
1027	5.273645	1077	5.799645
1028	5.283920	1078	5.810420
1029	5.294205	1079	5.821205
1030	5.304500	1080	5.832000
1031	5.314805	1081	5.842805
1032	5.325120	1082	5.853620
1033	5.335445	1083	5.864445
1034	5.345780	1084	5.875280
1035	5.356125	1085	5.886125
1036	5.366480	1086	5.896980
1037	5.376845	1087	5.907845
1038	5.387220	1088	5.918720
1039	5.397605	1089	5.929605
1040	5.408000	1090	5.940500
1041	5.418405	1091	5.951405
1042	5.428820	1092	5.962320
1043	5.439245	1093	5.973245
1044	5.449680	1094	5.984180
1045	5.460125	1095	5.995125
1046	5.470580	1096	6.006080
1047	5.481045	1097	6.017045
1048	5.491520	1098	6.028020
1049	5.502005	1099	6.039005
1050	5.512500	1100	6.050000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
1101	6.061005	1151	6.624005
1102	6.072020	1152	6.635520
1103	6.083045	1153	6.647045
1104	6.094080	1154	6.658580
1105	6.105125	1155	6.670125
1106	6.116180	1156	6.681680
1107	6.127245	1157	6.693245
1108	6.138320	1158	6.704820
1109	6.149405	1159	6.716405
1110	6.160500	1160	6.728000
1111	6.171605	1161	6.739605
1112	6.182720	1162	6.751220
1113	6.193845	1163	6.762845
1114	6.204980	1164	6.774480
1115	6.216125	1165	6.786125
1116	6.227280	1166	6.797780
1117	6.238445	1167	6.809445
1118	6.249620	1168	6.821120
1119	6.260805	1169	6.832805
1120	6.272000	1170	6.844500
1121	6.283205	1171	6.856205
1122	6.294420	1172	6.867920
1123	6.305645	1173	6.879645
1124	6.316880	1174	6.891380
1125	6.328125	1175	6.903125
1126	6.339380	1176	6.914880
1127	6.350645	1177	6.926645
1128	6.361920	1178	6.938420
1129	6.373205	1179	6.950205
1130	6.384500	1180	6.962000
1131	6.395805	1181	6.973805
1132	6.407120	1182	6.985620
1133	6.418445	1183	6.997445
1134	6.429780	1184	7.009280
1135	6.441125	1185	7.021125
1136	6.452480	1186	7.032980
1137	6.463845	1187	7.044845
1138	6.475220	1188	7.056720
1139	6.486605	1189	7.068605
1140	6.498000	1190	7.080500
1141	6.509405	1191	7.092405
1142	6.520820	1192	7.104320
1143	6.532245	1193	7.116245
1144	6.543680	1194	7.128180
1145	6.555125	1195	7.140125
1146	6.566580	1196	7.152080
1147	6.578045	1197	7.164045
1148	6.589520	1198	7.176020
1149	6.601005	1199	7.188005
1150	6.612500	1200	7.200000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
1201	7.212005	1251	7.825005
1202	7.224020	1252	7.837520
1203	7.236045	1253	7.850045
1204	7.248080	1254	7.862580
1205	7.260125	1255	7.875125
1206	7.272180	1256	7.887680
1207	7.284245	1257	7.900245
1208	7.296320	1258	7.912820
1209	7.308405	1259	7.925405
1210	7.320500	1260	7.938000
1211	7.332605	1261	7.950605
1212	7.344720	1262	7.963220
1213	7.356845	1263	7.975845
1214	7.368980	1264	7.988480
1215	7.381125	1265	8.001125
1216	7.393280	1266	8.013780
1217	7.405445	1267	8.026445
1218	7.417620	1268	8.039120
1219	7.429805	1269	8.051805
1220	7.442000	1270	8.064500
1221	7.454205	1271	8.077205
1222	7.466420	1272	8.089920
1223	7.478645	1273	8.102645
1224	7.490880	1274	8.115380
1225	7.503125	1275	8.128125
1226	7.515380	1276	8.140880
1227	7.527645	1277	8.153645
1228	7.539920	1278	8.166420
1229	7.552205	1279	8.179205
1230	7.564500	1280	8.192000
1231	7.576805	1281	8.204805
1232	7.589120	1282	8.217620
1233	7.601445	1283	8.230445
1234	7.613780	1284	8.243280
1235	7.626125	1285	8.256125
1236	7.638480	1286	8.268980
1237	7.650845	1287	8.281845
1238	7.663220	1288	8.294720
1239	7.675605	1289	8.307605
1240	7.688000	1290	8.320500
1241	7.700405	1291	8.333405
1242	7.712820	1292	8.346320
1243	7.725245	1293	8.359245
1244	7.737680	1294	8.372180
1245	7.750125	1295	8.385125
1246	7.762580	1296	8.398080
1247	7.775045	1297	8.411045
1248	7.787520	1298	8.424020
1249	7.800005	1299	8.437005
1250	7.812500	1300	8.450000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
1301	8.463005	1351	9.126005
1302	8.476020	1352	9.139520
1303	8.489045	1353	9.153045
1304	8.502080	1354	9.166580
1305	8.515125	1355	9.180125
1306	8.528180	1356	9.193680
1307	8.541245	1357	9.207245
1308	8.554320	1358	9.220820
1309	8.567405	1359	9.234405
1310	8.580500	1360	9.248000
1311	8.593605	1361	9.261605
1312	8.606720	1362	9.275220
1313	8.619845	1363	9.288845
1314	8.632980	1364	9.302480
1315	8.646125	1365	9.316125
1316	8.659280	1366	9.329780
1317	8.672445	1367	9.343445
1318	8.685620	1368	9.357120
1319	8.698805	1369	9.370805
1320	8.712000	1370	9.384500
1321	8.725205	1371	9.398205
1322	8.738420	1372	9.411920
1323	8.751645	1373	9.425645
1324	8.764880	1374	9.439380
1325	8.778125	1375	9.453125
1326	8.791380	1376	9.466880
1327	8.804645	1377	9.480645
1328	8.817920	1378	9.494420
1329	8.831205	1379	9.508205
1330	8.844500	1380	9.522000
1331	8.857805	1381	9.535805
1332	8.871120	1382	9.549620
1333	8.884445	1383	9.563445
1334	8.897780	1384	9.577280
1335	8.911125	1385	9.591125
1336	8.924480	1386	9.604980
1337	8.937845	1387	9.618845
1338	8.951220	1388	9.632720
1339	8.964605	1389	9.646605
1340	8.978000	1390	9.660500
1341	8.991405	1391	9.674405
1342	9.004820	1392	9.688320
1343	9.018245	1393	9.702245
1344	9.031680	1394	9.716180
1345	9.045125	1395	9.730125
1346	9.058580	1396	9.744080
1347	9.072045	1397	9.758045
1348	9.085520	1398	9.772020
1349	9.099005	1399	9.786005
1350	9.112500	1400	9.800000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
1401	9.814005	1451	10.527005
1402	9.828020	1452	10.541520
1403	9.842045	1453	10.556045
1404	9.856080	1454	10.570580
1405	9.870125	1455	10.585125
1406	9.884180	1456	10.599680
1407	9.898245	1457	10.614245
1408	9.912320	1458	10.628820
1409	9.926405	1459	10.643405
1410	9.940500	1460	10.658000
1411	9.954605	1461	10.672605
1412	9.968720	1462	10.687220
1413	9.982845	1463	10.701845
1414	9.996980	1464	10.716480
1415	10.011125	1465	10.731125
1416	10.025280	1466	10.745780
1417	10.039445	1467	10.760445
1418	10.053620	1468	10.775120
1419	10.067805	1469	10.789805
1420	10.082000	1470	10.804500
1421	10.096205	1471	10.819205
1422	10.110420	1472	10.833920
1423	10.124645	1473	10.848645
1424	10.138880	1474	10.863380
1425	10.153125	1475	10.878125
1426	10.167380	1476	10.892880
1427	10.181645	1477	10.907645
1428	10.195920	1478	10.922420
1429	10.210205	1479	10.937205
1430	10.224500	1480	10.952000
1431	10.238805	1481	10.966805
1432	10.253120	1482	10.981620
1433	10.267445	1483	10.996445
1434	10.281780	1484	11.011280
1435	10.296125	1485	11.026125
1436	10.310480	1486	11.040980
1437	10.324845	1487	11.055845
1438	10.339220	1488	11.070720
1439	10.353605	1489	11.085605
1440	10.368000	1490	11.100500
1441	10.382405	1491	11.115405
1442	10.396820	1492	11.130320
1443	10.411245	1493	11.145245
1444	10.425680	1494	11.160180
1445	10.440125	1495	11.175125
1446	10.454580	1496	11.190080
1447	10.469045	1497	11.205045
1448	10.483520	1498	11.220020
1449	10.498005	1499	11.235005
1450	10.512500	1500	11.250000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
1501	11.265005	1551	12.028005
1502	11.280020	1552	12.043520
1503	11.295045	1553	12.059045
1504	11.310080	1554	12.074580
1505	11.325125	1555	12.090125
1506	11.340180	1556	12.105680
1507	11.355245	1557	12.121245
1508	11.370320	1558	12.136820
1509	11.385405	1559	12.152405
1510	11.400500	1560	12.168000
1511	11.415605	1561	12.183605
1512	11.430720	1562	12.199220
1513	11.445845	1563	12.214845
1514	11.460980	1564	12.230480
1515	11.476125	1565	12.246125
1516	11.491280	1566	12.261780
1517	11.506445	1567	12.277445
1518	11.521620	1568	12.293120
1519	11.536805	1569	12.308805
1520	11.552000	1570	12.324500
1521	11.567205	1571	12.340205
1522	11.582420	1572	12.355920
1523	11.597645	1573	12.371645
1524	11.612880	1574	12.387380
1525	11.628125	1575	12.403125
1526	11.643380	1576	12.418880
1527	11.658645	1577	12.434645
1528	11.673920	1578	12.450420
1529	11.689205	1579	12.466205
1530	11.704500	1580	12.482000
1531	11.719805	1581	12.497805
1532	11.735120	1582	12.513620
1533	11.750445	1583	12.529445
1534	11.765780	1584	12.545280
1535	11.781125	1585	12.561125
1536	11.796480	1586	12.576980
1537	11.811845	1587	12.592845
1538	11.827220	1588	12.608720
1539	11.842605	1589	12.624605
1540	11.858000	1590	12.640500
1541	11.873405	1591	12.656405
1542	11.888820	1592	12.672320
1543	11.904245	1593	12.688245
1544	11.919680	1594	12.704180
1545	11.935125	1595	12.720125
1546	11.950580	1596	12.736080
1547	11.966045	1597	12.752045
1548	11.981520	1598	12.768020
1549	11.997005	1599	12.784005
1550	12.012500	1600	12.800000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
1601	12.816005	1651	13.629005
1602	12.832020	1652	13.645520
1603	12.848045	1653	13.662045
1604	12.864080	1654	13.678580
1605	12.880125	1655	13.695125
1606	12.896180	1656	13.711680
1607	12.912245	1657	13.728245
1608	12.928320	1658	13.744820
1609	12.944405	1659	13.761405
1610	12.960500	1660	13.778000
1611	12.976605	1661	13.794605
1612	12.992720	1662	13.811220
1613	13.008845	1663	13.827845
1614	13.024980	1664	13.844480
1615	13.041125	1665	13.861125
1616	13.057280	1666	13.877780
1617	13.073445	1667	13.894445
1618	13.089620	1668	13.911120
1619	13.105805	1669	13.927805
1620	13.122000	1670	13.944500
1621	13.138205	1671	13.961205
1622	13.154420	1672	13.977920
1623	13.170645	1673	13.994645
1624	13.186880	1674	14.011380
1625	13.203125	1675	14.028125
1626	13.219380	1676	14.044880
1627	13.235645	1677	14.061645
1628	13.251920	1678	14.078420
1629	13.268205	1679	14.095205
1630	13.284500	1680	14.112000
1631	13.300805	1681	14.128805
1632	13.317120	1682	14.145620
1633	13.333445	1683	14.162445
1634	13.349780	1684	14.179280
1635	13.366125	1685	14.196125
1636	13.382480	1686	14.212980
1637	13.398845	1687	14.229845
1638	13.415220	1688	14.246720
1639	13.431605	1689	14.263605
1640	13.448000	1690	14.280500
1641	13.464405	1691	14.297405
1642	13.480820	1692	14.314320
1643	13.497245	1693	14.331245
1644	13.513680	1694	14.348180
1645	13.530125	1695	14.365125
1646	13.546580	1696	14.382080
1647	13.563045	1697	14.399045
1648	13.579520	1698	14.416020
1649	13.596005	1699	14.433005
1650	13.612500	1700	14.450000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
1701	14.467005	1751	15.330005
1702	14.484020	1752	15.347520
1703	14.501045	1753	15.365045
1704	14.518080	1754	15.382580
1705	14.535125	1755	15.400125
1706	14.552180	1756	15.417680
1707	14.569245	1757	15.435245
1708	14.586320	1758	15.452820
1709	14.603405	1759	15.470405
1710	14.620500	1760	15.488000
1711	14.637605	1761	15.505605
1712	14.654720	1762	15.523220
1713	14.671845	1763	15.540845
1714	14.688980	1764	15.558480
1715	14.706125	1765	15.576125
1716	14.723280	1766	15.593780
1717	14.740445	1767	15.611445
1718	14.757620	1768	15.629120
1719	14.774805	1769	15.646805
1720	14.792000	1770	15.664500
1721	14.809205	1771	15.682205
1722	14.826420	1772	15.699920
1723	14.843645	1773	15.717645
1724	14.860880	1774	15.735380
1725	14.878125	1775	15.753125
1726	14.895380	1776	15.770880
1727	14.912645	1777	15.788645
1728	14.929920	1778	15.806420
1729	14.947205	1779	15.824205
1730	14.964500	1780	15.842000
1731	14.981805	1781	15.859805
1732	14.999120	1782	15.877620
1733	15.016445	1783	15.895445
1734	15.033780	1784	15.913280
1735	15.051125	1785	15.931125
1736	15.068480	1786	15.948980
1737	15.085845	1787	15.966845
1738	15.103220	1788	15.984720
1739	15.120605	1789	16.002605
1740	15.138000	1790	16.020500
1741	15.155405	1791	16.038405
1742	15.172820	1792	16.056320
1743	15.190245	1793	16.074245
1744	15.207680	1794	16.092180
1745	15.225125	1795	16.110125
1746	15.242580	1796	16.128080
1747	15.260045	1797	16.146045
1748	15.277520	1798	16.164020
1749	15.295005	1799	16.182005
1750	15.312500	1800	16.200000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
1801	16.218005	1851	17.131005
1802	16.236020	1852	17.149520
1803	16.254045	1853	17.168045
1804	16.272080	1854	17.186580
1805	16.290125	1855	17.205125
1806	16.308180	1856	17.223680
1807	16.326245	1857	17.242245
1808	16.344320	1858	17.260820
1809	16.362405	1859	17.279405
1810	16.380500	1860	17.298000
1811	16.398605	1861	17.316605
1812	16.416720	1862	17.335220
1813	16.434845	1863	17.353845
1814	16.452980	1864	17.372480
1815	16.471125	1865	17.391125
1816	16.489280	1866	17.409780
1817	16.507445	1867	17.428445
1818	16.525620	1868	17.447120
1819	16.543805	1869	17.465805
1820	16.562000	1870	17.484500
1821	16.580205	1871	17.503205
1822	16.598420	1872	17.521920
1823	16.616645	1873	17.540645
1824	16.634880	1874	17.559380
1825	16.653125	1875	17.578125
1826	16.671380	1876	17.596880
1827	16.689645	1877	17.615645
1828	16.707920	1878	17.634420
1829	16.726205	1879	17.653205
1830	16.744500	1880	17.672000
1831	16.762805	1881	17.690805
1832	16.781120	1882	17.709620
1833	16.799445	1883	17.728445
1834	16.817780	1884	17.747280
1835	16.836125	1885	17.766125
1836	16.854480	1886	17.784980
1837	16.872845	1887	17.803845
1838	16.891220	1888	17.822720
1839	16.909605	1889	17.841605
1840	16.928000	1890	17.860500
1841	16.946405	1891	17.879405
1842	16.964820	1892	17.898320
1843	16.983245	1893	17.917245
1844	17.001680	1894	17.936180
1845	17.020125	1895	17.955125
1846	17.038580	1896	17.974080
1847	17.057045	1897	17.993045
1848	17.075520	1898	18.012020
1849	17.094005	1899	18.031005
1850	17.112500	1900	18.050000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
1901	18.069005	1951	19.032005
1902	18.088020	1952	19.051520
1903	18.107045	1953	19.071045
1904	18.126080	1954	19.090580
1905	18.145125	1955	19.110125
1906	18.164180	1956	19.129680
1907	18.183245	1957	19.149245
1908	18.202320	1958	19.168820
1909	18.221405	1959	19.188405
1910	18.240500	1960	19.208000
1911	18.259605	1961	19.227605
1912	18.278720	1962	19.247220
1913	18.297845	1963	19.266845
1914	18.316980	1964	19.286480
1915	18.336125	1965	19.306125
1916	18.355280	1966	19.325780
1917	18.374445	1967	19.345445
1918	18.393620	1968	19.365120
1919	18.412805	1969	19.384805
1920	18.432000	1970	19.404500
1921	18.451205	1971	19.424205
1922	18.470420	1972	19.443920
1923	18.489645	1973	19.463645
1924	18.508880	1974	19.483380
1925	18.528125	1975	19.503125
1926	18.547380	1976	19.522880
1927	18.566645	1977	19.542645
1928	18.585920	1978	19.562420
1929	18.605205	1979	19.582205
1930	18.624500	1980	19.602000
1931	18.643805	1981	19.621805
1932	18.663120	1982	19.641620
1933	18.682445	1983	19.661445
1934	18.701780	1984	19.681280
1935	18.721125	1985	19.701125
1936	18.740480	1986	19.720980
1937	18.759845	1987	19.740845
1938	18.779220	1988	19.760720
1939	18.798605	1989	19.780605
1940	18.818000	1990	19.800500
1941	18.837405	1991	19.820405
1942	18.856820	1992	19.840320
1943	18.876245	1993	19.860245
1944	18.895680	1994	19.880180
1945	18.915125	1995	19.900125
1946	18.934580	1996	19.920080
1947	18.954045	1997	19.940045
1948	18.973520	1998	19.960020
1949	18.993005	1999	19.980005
1950	19.012500	2000	20.000000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
2001	20.020005	2051	21.033005
2002	20.040020	2052	21.053520
2003	20.060045	2053	21.074045
2004	20.080080	2054	21.094580
2005	20.100125	2055	21.115125
2006	20.120180	2056	21.135680
2007	20.140245	2057	21.156245
2008	20.160320	2058	21.176820
2009	20.180405	2059	21.197405
2010	20.200500	2060	21.218000
2011	20.220605	2061	21.238605
2012	20.240720	2062	21.259220
2013	20.260845	2063	21.279845
2014	20.280980	2064	21.300480
2015	20.301125	2065	21.321125
2016	20.321280	2066	21.341780
2017	20.341445	2067	21.362445
2018	20.361620	2068	21.383120
2019	20.381805	2069	21.403805
2020	20.402000	2070	21.424500
2021	20.422205	2071	21.445205
2022	20.442420	2072	21.465920
2023	20.462645	2073	21.486645
2024	20.482880	2074	21.507380
2025	20.503125	2075	21.528125
2026	20.523380	2076	21.548880
2027	20.543645	2077	21.569645
2028	20.563920	2078	21.590420
2029	20.584205	2079	21.611205
2030	20.604500	2080	21.632000
2031	20.624805	2081	21.652805
2032	20.645120	2082	21.673620
2033	20.665445	2083	21.694445
2034	20.685780	2084	21.715280
2035	20.706125	2085	21.736125
2036	20.726480	2086	21.756980
2037	20.746845	2087	21.777845
2038	20.767220	2088	21.798720
2039	20.787605	2089	21.819605
2040	20.808000	2090	21.840500
2041	20.828405	2091	21.861405
2042	20.848820	2092	21.882320
2043	20.869245	2093	21.903245
2044	20.889680	2094	21.924180
2045	20.910125	2095	21.945125
2046	20.930580	2096	21.966080
2047	20.951045	2097	21.987045
2048	20.971520	2098	22.008020
2049	20.992005	2099	22.029005
2050	21.012500	2100	22.050000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
2101	22.071005	2151	23.134005
2102	22.092020	2152	23.155520
2103	22.113045	2153	23.177045
2104	22.134080	2154	23.198580
2105	22.155125	2155	23.220125
2106	22.176180	2156	23.241680
2107	22.197245	2157	23.263245
2108	22.218320	2158	23.284820
2109	22.239405	2159	23.306405
2110	22.260500	2160	23.328000
2111	22.281605	2161	23.349605
2112	22.302720	2162	23.371220
2113	22.323845	2163	23.392845
2114	22.344980	2164	23.414480
2115	22.366125	2165	23.436125
2116	22.387280	2166	23.457780
2117	22.408445	2167	23.479445
2118	22.429620	2168	23.501120
2119	22.450805	2169	23.522805
2120	22.472000	2170	23.544500
2121	22.493205	2171	23.566205
2122	22.514420	2172	23.587920
2123	22.535645	2173	23.609645
2124	22.556880	2174	23.631380
2125	22.578125	2175	23.653125
2126	22.599380	2176	23.674880
2127	22.620645	2177	23.696645
2128	22.641920	2178	23.718420
2129	22.663205	2179	23.740205
2130	22.684500	2180	23.762000
2131	22.705805	2181	23.783805
2132	22.727120	2182	23.805620
2133	22.748445	2183	23.827445
2134	22.769780	2184	23.849280
2135	22.791125	2185	23.871125
2136	22.812480	2186	23.892980
2137	22.833845	2187	23.914845
2138	22.855220	2188	23.936720
2139	22.876605	2189	23.958605
2140	22.898000	2190	23.980500
2141	22.919405	2191	24.002405
2142	22.940820	2192	24.024320
2143	22.962245	2193	24.046245
2144	22.983680	2194	24.068180
2145	23.005125	2195	24.090125
2146	23.026580	2196	24.112080
2147	23.048045	2197	24.134045
2148	23.069520	2198	24.156020
2149	23.091005	2199	24.178005
2150	23.112500	2200	24.200000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
2201	24.222005	2251	25.335005
2202	24.244020	2252	25.357520
2203	24.266045	2253	25.380045
2204	24.288080	2254	25.402580
2205	24.310125	2255	25.425125
2206	24.332180	2256	25.447680
2207	24.354245	2257	25.470245
2208	24.376320	2258	25.492820
2209	24.398405	2259	25.515405
2210	24.420500	2260	25.538000
2211	24.442605	2261	25.560605
2212	24.464720	2262	25.583220
2213	24.486845	2263	25.605845
2214	24.508980	2264	25.628480
2215	24.531125	2265	25.651125
2216	24.553280	2266	25.673780
2217	24.575445	2267	25.696445
2218	24.597620	2268	25.719120
2219	24.619805	2269	25.741805
2220	24.642000	2270	25.764500
2221	24.664205	2271	25.787205
2222	24.686420	2272	25.809920
2223	24.708645	2273	25.832645
2224	24.730880	2274	25.855380
2225	24.753125	2275	25.878125
2226	24.775380	2276	25.900880
2227	24.797645	2277	25.923645
2228	24.819920	2278	25.946420
2229	24.842205	2279	25.969205
2230	24.864500	2280	25.992000
2231	24.886805	2281	26.014805
2232	24.909120	2282	26.037620
2233	24.931445	2283	26.060445
2234	24.953780	2284	26.083280
2235	24.976125	2285	26.106125
2236	24.998480	2286	26.128980
2237	25.020845	2287	26.151845
2238	25.043220	2288	26.174720
2239	25.065605	2289	26.197605
2240	25.088000	2290	26.220500
2241	25.110405	2291	26.243405
2242	25.132820	2292	26.266320
2243	25.155245	2293	26.289245
2244	25.177680	2294	26.312180
2245	25.200125	2295	26.335125
2246	25.222580	2296	26.358080
2247	25.245045	2297	26.381045
2248	25.267520	2298	26.404020
2249	25.290005	2299	26.427005
2250	25.312500	2300	26.450000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
2301	26.473005	2351	27.636005
2302	26.496020	2352	27.659520
2303	26.519045	2353	27.683045
2304	26.542080	2354	27.706580
2305	26.565125	2355	27.730125
2306	26.588180	2356	27.753680
2307	26.611245	2357	27.777245
2308	26.634320	2358	27.800820
2309	26.657405	2359	27.824405
2310	26.680500	2360	27.848000
2311	26.703605	2361	27.871605
2312	26.726720	2362	27.895220
2313	26.749845	2363	27.918845
2314	26.772980	2364	27.942480
2315	26.796125	2365	27.966125
2316	26.819280	2366	27.989780
2317	26.842445	2367	28.013445
2318	26.865620	2368	28.037120
2319	26.888805	2369	28.060805
2320	26.912000	2370	28.084500
2321	26.935205	2371	28.108205
2322	26.958420	2372	28.131920
2323	26.981645	2373	28.155645
2324	27.004880	2374	28.179380
2325	27.028125	2375	28.203125
2326	27.051380	2376	28.226880
2327	27.074645	2377	28.250645
2328	27.097920	2378	28.274420
2329	27.121205	2379	28.298205
2330	27.144500	2380	28.322000
2331	27.167805	2381	28.345805
2332	27.191120	2382	28.369620
2333	27.214445	2383	28.393445
2334	27.237780	2384	28.417280
2335	27.261125	2385	28.441125
2336	27.284480	2386	28.464980
2337	27.307845	2387	28.488845
2338	27.331220	2388	28.512720
2339	27.354605	2389	28.536605
2340	27.378000	2390	28.560500
2341	27.401405	2391	28.584405
2342	27.424820	2392	28.608320
2343	27.448245	2393	28.632245
2344	27.471680	2394	28.656180
2345	27.495125	2395	28.680125
2346	27.518580	2396	28.704080
2347	27.542045	2397	28.728045
2348	27.565520	2398	28.752020
2349	27.589005	2399	28.776005
2350	27.612500	2400	28.800000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
2401	28.824005	2451	30.037005
2402	28.848020	2452	30.061520
2403	28.872045	2453	30.086045
2404	28.896080	2454	30.110580
2405	28.920125	2455	30.135125
2406	28.944180	2456	30.159680
2407	28.968245	2457	30.184245
2408	28.992320	2458	30.208820
2409	29.016405	2459	30.233405
2410	29.040500	2460	30.258000
2411	29.064605	2461	30.282605
2412	29.088720	2462	30.307220
2413	29.112845	2463	30.331845
2414	29.136980	2464	30.356480
2415	29.161125	2465	30.381125
2416	29.185280	2466	30.405780
2417	29.209445	2467	30.430445
2418	29.233620	2468	30.455120
2419	29.257805	2469	30.479805
2420	29.282000	2470	30.504500
2421	29.306205	2471	30.529205
2422	29.330420	2472	30.553920
2423	29.354645	2473	30.578645
2424	29.378880	2474	30.603380
2425	29.403125	2475	30.628125
2426	29.427380	2476	30.652880
2427	29.451645	2477	30.677645
2428	29.475920	2478	30.702420
2429	29.500205	2479	30.727205
2430	29.524500	2480	30.752000
2431	29.548805	2481	30.776805
2432	29.573120	2482	30.801620
2433	29.597445	2483	30.826445
2434	29.621780	2484	30.851280
2435	29.646125	2485	30.876125
2436	29.670480	2486	30.900980
2437	29.694845	2487	30.925845
2438	29.719220	2488	30.950720
2439	29.743605	2489	30.975605
2440	29.768000	2490	31.000500
2441	29.792405	2491	31.025405
2442	29.816820	2492	31.050320
2443	29.841245	2493	31.075245
2444	29.865680	2494	31.100180
2445	29.890125	2495	31.125125
2446	29.914580	2496	31.150080
2447	29.939045	2497	31.175045
2448	29.963520	2498	31.200020
2449	29.988005	2499	31.225005
2450	30.012500	2500	31.250000

Table.No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
2501	31.275005	2551	32.538005
2502	31.300020	2552	32.563520
2503	31.325045	2553	32.589045
2504	31.350080	2554	32.614580
2505	31.375125	2555	32.640125
2506	31.400180	2556	32.665680
2507	31.425245	2557	32.691245
2508	31.450320	2558	32.716820
2509	31.475405	2559	32.742405
2510	31.500500	2560	32.768000
2511	31.525605	2561	32.793605
2512	31.550720	2562	32.819220
2513	31.575845	2563	32.844845
2514	31.600980	2564	32.870480
2515	31.626125	2565	32.896125
2516	31.651280	2566	32.921780
2517	31.676445	2567	32.947445
2518	31.701620	2568	32.973120
2519	31.726805	2569	32.998805
2520	31.752000	2570	33.024500
2521	31.777205	2571	33.050205
2522	31.802420	2572	33.075920
2523	31.827645	2573	33.101645
2524	31.852880	2574	33.127380
2525	31.878125	2575	33.153125
2526	31.903380	2576	33.178880
2527	31.928645	2577	33.204645
2528	31.953920	2578	33.230420
2529	31.979205	2579	33.256205
2530	32.004500	2580	33.282000
2531	32.029805	2581	33.307805
2532	32.055120	2582	33.333620
2533	32.080445	2583	33.359445
2534	32.105780	2584	33.385280
2535	32.131125	2585	33.411125
2536	32.156480	2586	33.436980
2537	32.181845	2587	33.462845
2538	32.207220	2588	33.488720
2539	32.232605	2589	33.514605
2540	32.258000	2590	33.540500
2541	32.283405	2591	33.566405
2542	32.308820	2592	33.592320
2543	32.334245	2593	33.618245
2544	32.359680	2594	33.644180
2545	32.385125	2595	33.670125
2546	32.410580	2596	33.696080
2547	32.436045	2597	33.722045
2548	32.461520	2598	33.748020
2549	32.487005	2599	33.774005
2550	32.512500	2600	33.800000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
2601	33.826005	2651	35.139005
2602	33.852020	2652	35.165520
2603	33.878045	2653	35.192045
2604	33.904080	2654	35.218580
2605	33.930125	2655	35.245125
2606	33.956180	2656	35.271680
2607	33.982245	2657	35.298245
2608	34.008320	2658	35.324820
2609	34.034405	2659	35.351405
2610	34.060500	2660	35.378000
2611	34.086605	2661	35.404605
2612	34.112720	2662	35.431220
2613	34.138845	2663	35.457845
2614	34.164980	2664	35.484480
2615	34.191125	2665	35.511125
2616	34.217280	2666	35.537780
2617	34.243445	2667	35.564445
2618	34.269620	2668	35.591120
2619	34.295805	2669	35.617805
2620	34.322000	2670	35.644500
2621	34.348205	2671	35.671205
2622	34.374420	2672	35.697920
2623	34.400645	2673	35.724645
2624	34.426880	2674	35.751380
2625	34.453125	2675	35.778125
2626	34.479380	2676	35.804880
2627	34.505645	2677	35.831645
2628	34.531920	2678	35.858420
2629	34.558205	2679	35.885205
2630	34.584500	2680	35.912000
2631	34.610805	2681	35.938805
2632	34.637120	2682	35.965620
2633	34.663445	2683	35.992445
2634	34.689780	2684	36.019280
2635	34.716125	2685	36.046125
2636	34.742480	2686	36.072980
2637	34.768845	2687	36.099845
2638	34.795220	2688	36.126720
2639	34.821605	2689	36.153605
2640	34.848000	2690	36.180500
2641	34.874405	2691	36.207405
2642	34.900820	2692	36.234320
2643	34.927245	2693	36.261245
2644	34.953680	2694	36.288180
2645	34.980125	2695	36.315125
2646	35.006580	2696	36.342080
2647	35.033045	2697	36.369045
2648	35.059520	2698	36.396020
2649	35.086005	2699	36.423005
2650	35.112500	2700	36.450000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
2701	36.477005	2751	37.840005
2702	36.504020	2752	37.867520
2703	36.531045	2753	37.895045
2704	36.558080	2754	37.922580
2705	36.585125	2755	37.950125
2706	36.612180	2756	37.977680
2707	36.639245	2757	38.005245
2708	36.666320	2758	38.032820
2709	36.693405	2759	38.060405
2710	36.720500	2760	38.088000
2711	36.747605	2761	38.115605
2712	36.774720	2762	38.143220
2713	36.801845	2763	38.170845
2714	36.828980	2764	38.198480
2715	36.856125	2765	38.226125
2716	36.883280	2766	38.253780
2717	36.910445	2767	38.281445
2718	36.937620	2768	38.309120
2719	36.964805	2769	38.336805
2720	36.992000	2770	38.364500
2721	37.019205	2771	38.392205
2722	37.046420	2772	38.419920
2723	37.073645	2773	38.447645
2724	37.100880	2774	38.475380
2725	37.128125	2775	38.503125
2726	37.155380	2776	38.530880
2727	37.182645	2777	38.558645
2728	37.209920	2778	38.586420
2729	37.237205	2779	38.614205
2730	37.264500	2780	38.642000
2731	37.291805	2781	38.669805
2732	37.319120	2782	38.697620
2733	37.346445	2783	38.725445
2734	37.373780	2784	38.753280
2735	37.401125	2785	38.781125
2736	37.428480	2786	38.808980
2737	37.455845	2787	38.836845
2738	37.483220	2788	38.864720
2739	37.510605	2789	38.892605
2740	37.538000	2790	38.920500
2741	37.565405	2791	38.948405
2742	37.592820	2792	38.976320
2743	37.620245	2793	39.004245
2744	37.647680	2794	39.032180
2745	37.675125	2795	39.060125
2746	37.702580	2796	39.088080
2747	37.730045	2797	39.116045
2748	37.757520	2798	39.144020
2749	37.785005	2799	39.172005
2750	37.812500	2800	39.200000

Table No: 2.

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
2801	39.228005	2851	40.641005
2802	39.256020	2852	40.669520
2803	39.284045	2853	40.698045
2804	39.312080	2854	40.726580
2805	39.340125	2855	40.755125
2806	39.368180	2856	40.783680
2807	39.396245	2857	40.812245
2808	39.424320	2858	40.840820
2809	39.452405	2859	40.869405
2810	39.480500	2860	40.898000
2811	39.508605	2861	40.926605
2812	39.536720	2862	40.955220
2813	39.564845	2863	40.983845
2814	39.592980	2864	41.012480
2815	39.621125	2865	41.041125
2816	39.649280	2866	41.069780
2817	39.677445	2867	41.098445
2818	39.705620	2868	41.127120
2819	39.733805	2869	41.155805
2820	39.762000	2870	41.184500
2821	39.790205	2871	41.213205
2822	39.818420	2872	41.241920
2823	39.846645	2873	41.270645
2824	39.874880	2874	41.299380
2825	39.903125	2875	41.328125
2826	39.931380	2876	41.356880
2827	39.959645	2877	41.385645
2828	39.987920	2878	41.414420
2829	40.016205	2879	41.443205
2830	40.044500	2880	41.472000
2831	40.072805	2881	41.500805
2832	40.101120	2882	41.529620
2833	40.129445	2883	41.558445
2834	40.157780	2884	41.587280
2835	40.186125	2885	41.616125
2836	40.214480	2886	41.644980
2837	40.242845	2887	41.673845
2838	40.271220	2888	41.702720
2839	40.299605	2889	41.731605
2840	40.328000	2890	41.760500
2841	40.356405	2891	41.789405
2842	40.384820	2892	41.818320
2843	40.413245	2893	41.847245
2844	40.441680	2894	41.876180
2845	40.470125	2895	41.905125
2846	40.498580	2896	41.934080
2847	40.527045	2897	41.963045
2848	40.555520	2898	41.992020
2849	40.584005	2899	42.021005
2850	40.612500	2900	42.050000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
2901	42.079005	2951	43.542005
2902	42.108020	2952	43.571520
2903	42.137045	2953	43.601045
2904	42.166080	2954	43.630580
2905	42.195125	2955	43.660125
2906	42.224180	2956	43.689680
2907	42.253245	2957	43.719245
2908	42.282320	2958	43.748820
2909	42.311405	2959	43.778405
2910	42.340500	2960	43.808000
2911	42.369605	2961	43.837605
2912	42.398720	2962	43.867220
2913	42.427845	2963	43.896845
2914	42.456980	2964	43.926480
2915	42.486125	2965	43.956125
2916	42.515280	2966	43.985780
2917	42.544445	2967	44.015445
2918	42.573620	2968	44.045120
2919	42.602805	2969	44.074805
2920	42.632000	2970	44.104500
2921	42.661205	2971	44.134205
2922	42.690420	2972	44.163920
2923	42.719645	2973	44.193645
2924	42.748880	2974	44.223380
2925	42.778125	2975	44.253125
2926	42.807380	2976	44.282880
2927	42.836645	2977	44.312645
2928	42.865920	2978	44.342420
2929	42.895205	2979	44.372205
2930	42.924500	2980	44.402000
2931	42.953805	2981	44.431805
2932	42.983120	2982	44.461620
2933	43.012445	2983	44.491445
2934	43.041780	2984	44.521280
2935	43.071125	2985	44.551125
2936	43.100480	2986	44.580980
2937	43.129845	2987	44.610845
2938	43.159220	2988	44.640720
2939	43.188605	2989	44.670605
2940	43.218000	2990	44.700500
2941	43.247405	2991	44.730405
2942	43.276820	2992	44.760320
2943	43.306245	2993	44.790245
2944	43.335680	2994	44.820180
2945	43.365125	2995	44.850125
2946	43.394580	2996	44.880080
2947	43.424045	2997	44.910045
2948	43.453520	2998	44.940020
2949	43.483005	2999	44.970005
2950	43.512500	3000	**45.000000**

Table No. 2.

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
3001	45.030005	3051	46.543005
3002	45.060020	3052	46.573520
3003	45.090045	3053	46.604045
3004	45.120080	3054	46.634580
3005	45.150125	3055	46.665125
3006	45.180180	3056	46.695680
3007	45.210245	3057	46.726245
3008	45.240320	3058	46.756820
3009	45.270405	3059	46.787405
3010	45.300500	3060	46.818000
3011	45.330605	3061	46.848605
3012	45.360720	3062	46.879220
3013	45.390845	3063	46.909845
3014	45.420980	3064	46.940480
3015	45.451125	3065	46.971125
3016	45.481280	3066	47.001780
3017	45.511445	3067	47.032445
3018	45.541620	3068	47.063120
3019	45.571805	3069	47.093805
3020	45.602000	3070	47.124500
3021	45.632205	3071	47.155205
3022	45.662420	3072	47.185920
3023	45.692645	3073	47.216645
3024	45.722880	3074	47.247380
3025	45.753125	3075	47.278125
3026	45.783380	3076	47.308880
3027	45.813645	3077	47.339645
3028	45.843920	3078	47.370420
3029	45.874205	3079	47.401205
3030	45.904500	3080	47.432000
3031	45.934805	3081	47.462805
3032	45.965120	3082	47.493620
3033	45.995445	3083	47.524445
3034	46.025780	3084	47.555280
3035	46.056125	3085	47.586125
3036	46.086480	3086	47.616980
3037	46.116845	3087	47.647845
3038	46.147220	3088	47.678720
3039	46.177605	3089	47.709605
3040	46.208000	3090	47.740500
3041	46.238405	3091	47.771405
3042	46.268820	3092	47.802320
3043	46.299245	3093	47.833245
3044	46.329680	3094	47.864180
3045	46.360125	3095	47.895125
3046	46.390580	3096	47.926080
3047	46.421045	3097	47.957045
3048	46.451520	3098	47.988020
3049	46.482005	3099	48.019005
3050	46.512500	3100	48.050000

Table No. 2

Distance from P.C. in Feet	Factor	Distance from P.C. in Feet	Factor
3101	48.081005	3151	49.644005
3102	48.112020	3152	49.675520
3103	48.143045	3153	49.707045
3104	48.174080	3154	49.738580
3105	48.205125	3155	49.770125
3106	48.236180	3156	49.801680
3107	48.267245	3157	49.833245
3108	48.298320	3158	49.864820
3109	48.329405	3159	49.896405
3110	48.360500	3160	49.928000
3111	48.391605	3161	49.959605
3112	48.422720	3162	49.991220
3113	48.453845	3163	50.022845
3114	48.484980	3164	50.054480
3115	48.516125	3165	50.086125
3116	48.547280	3166	50.117780
3117	48.578445	3167	50.149445
3118	48.609620	3168	50.181120
3119	48.640805	3169	50.212805
3120	48.672000	3170	50.244500
3121	48.703205	3171	50.276205
3122	48.734420	3172	50.307920
3123	48.765645	3173	50.339645
3124	48.796880	3174	50.371380
3125	48.828125	3175	50.403125
3126	48.859380	3176	50.434880
3127	48.890645	3177	50.466645
3128	48.921920	3178	50.498420
3129	48.953205	3179	50.530205
3130	48.984500	3180	50.562000
3131	49.015805	3181	50.593805
3132	49.047120	3182	50.625620
3133	49.078445	3183	50.657445
3134	49.109780	3184	50.689280
3135	49.141125	3185	50.721125
3136	49.172480	3186	50.752980
3137	49.203845	3187	50.784845
3138	49.235220	3188	50.816720
3139	49.266605	3189	50.848605
3140	49.298000	3190	50.880500
3141	49.329405	3191	50.912405
3142	49.360820	3192	50.944320
3143	49.392245	3193	50.976245
3144	49.423680	3194	51.008180
3145	49.455125	3195	51.040125
3146	49.486580	3196	51.072080
3147	49.518045	3197	51.104045
3148	49.549520	3198	51.136020
3149	49.581005	3199	51.168005
3150	49.612500	3200	51.200000